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UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE



# GROW TREES

## FACTS FOR AMERICAN FOREST WEEK

APRIL 18-24, 1926

### WHY AMERICAN FOREST WEEK?

Each year since 1920 the President of the United States has set aside a special week for public consideration of our forest needs. What is the reason?

Something of real and large importance must be involved, when by special proclamation of the President all the people of the country are yearly asked to turn their minds to some one question pertaining to the general welfare. And there must be something to be done, not merely talked about. "A common task," President Collidge called it last year, to which "we must all put our hands."

The reason for American Forest Week is that the whole country is directly and urgently concerned with how our forests are used and what they produce; that although there is no lack of land which could grow timber and for which no other use is in prospect, this land is not producing the timber that it should; that this condition ought to be changed; and that to change it is a job which concerns everyone and in which all can take part.

American Forest Week has a definite and practical purpose. Its observance is intended to help each and every one of us to discover what he or she individually can and will do to the end that we may have more trees and more valuable forests.

### WHERE OUR LUMBER COMES FROM

Although more than four-fifths of our original forested area has been cut over, we still get seven-tenths of our lumber from virgin forests.

The main lumber producing regions are the South and the far West.

Nearly 45 per cent of all the lumber used in this country is cut in the southern Atlantic and Gulf coast States, from Virginia to Texas. All these States are great producers. Louisiana, Mississippi, Alabama, and Texas are the leaders, with an enormous output of southern pine. Louisiana and Arkansas outstrip all other States in hardwood lumber production. Half of all the lumber shipped in interstate traffic comes from this southern group of States.

Washington and Oregon furnish one-fourth of the national cut and about one-third of the interstate traffic in lumber. They cut practically no hardwoods. Washington has been the foremost State in lumber production since 1905, but some day must yield first place to Oregon, which contains the largest amount of timber in any State.

In 1924 the South shipped to other regions more than 9,000,000,000 board feet of lumber, and the North Pacific States more than 6,000,000,000.

The South and the Pacific coast States together have about three-fourths of all the saw timber left in the country. The three Pacific coast States alone have more than half. Naturally, the parts of the country which have depleted their forests or which never had abundant timber draw largely upon the South and West to counterbalance their deficit.

It will make it easier to see the situation if we bring together into geographic groups the States which in a general way have similar conditions in the matter of forest supplies, use, and needs, and see how many are self-sustaining.

Ten such groups are shown in the table printed on page 14. Because of their divergent forest conditions, Virginia and North and South Carolina are set off from the rest of the Southern States in a group of their own. Similarly, California and Nevada are thrown together in a south Pacific group, leaving Washington and Oregon in a north Pacific group; and the Rocky Mountain States are divided into a northern and a southern group.

Out of every one of the 10 regions into which this grouping subdivides the country some lumber goes to other regions. But if a balance is struck between what is sent out and what is brought in, 6 of the 10 regions show minus balances.

The four from which the deficits are made up are the two southern regions which together include the Atlantic and Gulf States from Virginia to Texas, the north Pacific region (Oregon and Washington), and the northern Rocky Mountain region (Montana and Idaho).

In a broad way, therefore, our lumber comes from every part of the country, but outside of a group of four States in the far Northwest and a fringe of Southern States bordering the Atlantic and Gulf coasts, every part of the country cuts less lumber than it consumes. Even California exports to other States far less lumber than is brought into the State.

#### WHERE THE LUMBER GOES TO

East of the Mississippi and north of the Ohio and the Potomac is a group of 16 States which contain half of the population of the United States. Eleven of our foremost cities are located within this group. Its manufacturing establishments represent three-fourths of all the capital invested in American manufactures. For this reason this block of States is frequently termed the industrial group.

It is particularly the center of manufactures using large quantities of high-grade lumber and wood, such as automobile, piano, furniture, implement, and handle works, besides the bulk of the wood pulp and paper mills. Undoubtedly this concentration of manufactures was partly due to the fact that the dense original forests of the region were unsurpassed for the quality and variety of their timber trees, particularly the northern white pine, spruce, oak, and ash.

In 1869 this region was supplying nearly three-fourths of the lumber cut

of the United States. As recently as 1895 its cut was half of the national total. But in 1923 the region produced only one-tenth of the total.

This region uses almost half the lumber consumed in the United States. It supplies less than a fourth of its own requirements. Half of what it needs comes from the southern States, and more than one-eighth from the Pacific coast. It consumes 15,000,000,000 feet yearly, and of this huge quantity 12,000,000,000 feet are shipped in from other regions.

Geographically, this focus of lumber consumption is just as far as it can be from the forests which furnish the bulk of its supplies. It is fully 1,200 miles from the heart of the southern timber and about 2,700 miles from the Pacific coast by rail. In 1923 the lumber freight bill of this region was in the neighborhood of \$200,000,000, and the lumber consumed in the region bore an average charge for hauling of about \$13 a thousand feet.

Lumber is consumed in all inhabited parts of the country. The rate of consumption varies widely, but in general is very much greater per person in the Rocky Mountain and Pacific States than in those farther east. The per capita consumption of the Pacific States is four times as great as of those which touch the Atlantic.

All regions except the Prairie States produce and ship considerable quantities of lumber to other regions. As examples, the Lake States and the States of the central hardwood region are still very important contributors of hardwood lumber. The result is a vast maze of interchanges, three-fourths of the traffic being by rail. Nevertheless the Northeastern, Central, Lake, and Prairie States are heavy deficit States. The South and the Northwest are the only regions remaining from which the deficit can be made up without a large resort to local timber growing.

The conclusion is obvious. Our whole forest situation is out of joint. By cutting off our timber in one region after another without seeing to it that the lands suitable for timber production began growing another wood crop after the virgin crop was taken off, the more highly industrialized and the older agricultural States have to depend for the bulk of their lumber supplies on remote regions. Even though these distant and diminishing virgin forests were inexhaustible—which is quite contrary to the truth—nearer sources of



supply are essential. Each region and each State needs to recognize its own problem and consider carefully what its interests require. Timber growing on a large scale has become an economic necessity of the first order.

### OUR WOOD REQUIREMENTS

The United States uses more than two-fifths of all the wood consumed in the world. Abundance of timber is one of the main things that has made this the most prosperous of all countries. If we are deprived of ample wood supplies, the effect will appear in poorer housing, harder living, and less profitable business.

We consume each year about 200 cubic feet of wood for each man, woman, and child. The world average is about 30 cubic feet. We take 60 cubic feet from virgin timber. Within recent years the tendency has been to diminish our rate of wood use, to utilize waste, to protect wood with preservatives, and to use substitutes. The rising price of all wood and the increasing scarcity of the most desirable kinds are driving us to more conservative practices.

We have been able to use wood freely because of our immense stores of virgin timber and the development of our railroads which have kept consumers in touch with the constantly retreating forests. As these disappear, the needs of the country will have to be met chiefly from the annual growth of our forest lands. No adequate foreign sources of supply at reasonable prices are in prospect.

Although necessity is beginning to teach us how to reduce our drain on the forest through less wasteful use, our consumption is four times the rate of replacement through growth. The balance of course comes from the remaining virgin supplies. If all of our forest land had been cut over and were being handled in the same way that we treat our present second-growth lands, they would provide about half as much wood as we now consume. But the population of the country is increasing. It doubled in the 30 years between 1850 and 1880 and doubled again in the 40 years between 1880 and 1920. At the present rate, if we grew wood no faster than we do now, 70 years hence the people of the United States would have to get along on one-fourth as much per person as they now use.

It is true that the world per capita consumption of about 30 cubic feet per person is still smaller. The world

average, however, is depressed by the low consumption of countries like China and India. The needs of a highly industrialized country like the United States find no rational measure in the consumption of these vast populations with their low standards of living.

The world-wide tendency is for timber requirements to increase rather than diminish, in spite of the greater use of substitutes for wood. This is particularly true of saw timber. Within the past few decades the total consumption of saw timber has increased in France, Germany, Great Britain, Belgium, Italy, and the United States at a rate which was equivalent to doubling the world consumption in 50 years.

In this country 70 per cent of our lumber comes from the dwindling virgin stands. Of our second-growth cut only one-seventh is saw timber, and that is of relatively inferior quality. Already the regions which have used up their virgin forests lack for timber of this kind, as the rising prices and the long hauls plainly indicate.

The present acreage of forest land in the country—namely, 470,000,000 acres—is just about what we are likely always to have. It will not be in demand for agriculture because timber is a better paying crop for most of it. By using its full capacity to grow timber as a well-cared-for crop in place of a wild-land product, wood enough to provide reasonably for our needs can in time be obtained. Our wood requirements must be met by growing trees (not by just letting trees grow) on all our forest land.

### THE PROSPECT FOR TIMBER GROWING

To obtain an idea of the progress hitherto made toward intelligent use of the forest lands of the country as sources of permanent timber supplies, and to understand what further measures are called for in order that the wood requirements of the Nation may be met, it is necessary to review the salient facts region by region.

#### THE NORTHEAST

The forests of the Northeastern States furnished the greater portion of the country's timber requirements until after the Civil War. They lost their commanding position as the output of other regions increased, yet the quantity of timber produced in the region as a whole did not decline for another 50 years. The forests were not cut as closely as in some other regions, nor was cutting as generally followed by

fires; while millions of acres that had been cleared and cultivated for a time grew up again to trees. So a larger proportion of the land bears second-growth timber than is the case in any other part of the country.

The present output of lumber and other wood products considerably exceeds the annual growth of the forests, yet meets only a small fraction of the region's requirements. High-grade lumber comes largely from the Gulf States and the Pacific coast, while the pulp and paper industry, with more than a half billion dollars invested, gets a large portion of its raw material from Canada and northern Europe.

Over most of the region economic conditions favor intensive timber culture. The States and other agencies, supported by an excellent public sentiment, give more effective forest fire protection than is had in any other region. Only 1 per cent of the area is in national forests. Most of the States are building up State forests, and a movement is now developing for the establishment of municipal and county forests. But the bulk of the land will undoubtedly always remain in private ownership.

Large holdings will predominate in the northern and mountainous parts of the region, and smaller holdings elsewhere. Now that fire protection is fairly effective, the most urgent step is to get the forest lands adequately stocked with the best kinds of trees. Although the area planted by public and private owners is large and is increasing yearly, there are still many millions of acres that need planting, and more millions that are only partially stocked or stocked mainly with poor trees. Such stands can be made fully productive only by better timber-growing methods, which are now entirely practicable throughout most of the region.

#### THE SOUTH

The States bordering the coast from the Potomac River to Texas include three forest regions. The Appalachian region still has extensive virgin forests of high-grade hardwoods, but they are rapidly being cut off. Except on the poorest sites, where fires destroy the soil, cut-over lands usually restock quickly, and timber grows fast. In quality the new stands are usually inferior because the methods of cutting do not favor the reproduction and growth of the best kinds of trees.

The land is mostly in fairly large commercial tracts, but few of the

present owners have any intention of holding it for permanent timber production. The forests of the Appalachians are particularly important from the public standpoint because they cover the headwaters of so many large streams, and public holdings in the region should be considerably increased. There are practically no State forests, but about 1,500,000 acres are in national forests.

Hardwood bottom lands occur in the lower portion of the Mississippi Valley and intermingled with the pine region along all the large streams. They contain the largest remaining supply of high-grade hardwood timber, which is fast being cut away. Most of the land has rich alluvial soils and will ultimately be farmed, but a great deal of it can grow timber for many years before agricultural demand will bring about its clearing. By proper cutting methods these forests can be made to produce high-grade timber continuously until they are needed for farming. This type of forest will never be publicly owned to any large extent.

The southern pine forests are now producing more than one-third of our lumber and all of our rosin and turpentine. Part of the land, particularly in the Piedmont belt, is in farm woods and other small tracts, with second-growth predominating. The greater portion, however, is in large tracts that have been or are being cut by commercial mills.

The older cuttings did not strip the land as clean as the more recent have done, so that much of the cut-over area and numerous old abandoned fields bear young stands of pine, from which a considerable part of the present cut comes. Most of the pine land has been repeatedly burned, and annual fires are still common. With reasonable freedom from burning and from unrestricted grazing by hogs, natural restocking with pine is fairly certain.

Timber grows to merchantable size in this region faster than in any other, except certain localities on the Pacific coast, and some of the pine forests have the further advantage of yielding an early revenue from their resin. Stumpage values have gone up rapidly during recent years, and various large owners, realizing that timber growing is now economically feasible, are planning to undertake it on a large scale. Most of the pine land that escapes denudation will continue to produce timber in private ownership, if the public responsibility to help bring this about is suitably recognized.



Aside from less than 1,500,000 acres of national forests, chiefly in Florida and Arkansas, very little pine land is owned by the public. Federal purchases of some 2,500,000 acres with a view to restoring timber growth on depleted lands and demonstrating on a large scale how to produce tree crops profitably are proposed as a part of the program for carrying out the Clarke-McNary Law, passed by Congress in 1924. But the greatest needs of the South for perpetuation of its timber and turpentine resources, which play so large a part in its economic life, are for more vigorous State action and for industrial and farm forestry.

Several of the States have no forestry departments yet, and through most of the region fire protection is inadequate or entirely lacking. To provide effective protection and to bring about the restocking of many millions of acres of denuded land public action is essential. This is primarily a matter of concern to the States whose industries and tax rolls depend largely upon pine. It is almost as vital, however, to the industrial and agricultural regions of the Northeastern and Central States, which must long continue to draw heavily upon southern forests.

#### THE LAKE STATES

Without the hundreds of billions of feet of white pine and other valuable timber that grew in the Great Lakes region, the development of the Mississippi Valley States would have been much slower and more difficult. The northern forests offer extreme examples of the denudation resulting from unregulated lumbering and widespread, repeated burning. White pine and other desirable kinds of trees have not come back to anything like the extent that they have in the Northeast. Many millions of acres have lain idle for 20 years or longer, and many other millions of acres are more or less completely covered with young growth of inferior quality. The fire hazard is much more serious than in most of the Northeast because of the wide, unbroken stretches of comparatively level sandy land covered with inflammable brush or young coniferous growth. The population in the forest sections is sparse, the bulk of the forest land is owned by nonresidents, and public sentiment against fires is less strong than in the Northeast. Now that it is becoming evident that agricultural utilization of these lands will take place very slowly, if at all, the owners and the public are coming to realize

the necessity of restoring and maintaining a forest cover.

Not only do the Lake States themselves use far more lumber than their remaining forests can produce, but the forests are also the nearest to the great consuming markets of the Ohio and Mississippi valleys. There can be no doubt, therefore, that timber growing will be profitable in the long run in the Great Lakes region. The biggest problem is the long period which must elapse on much of the area between the reestablishment of growing forests and the time when they will begin to yield material and financial returns.

To some extent this difficulty will be lightened by utilizing the comparatively inferior, fast-growing species at a fairly early age for paper pulp. It seems probable, however, that the reforestation of much of the denuded land will have to come about through public agencies. Large tracts are already owned by the Federal Government in Michigan and Minnesota, and by all three States, and thousands of acres are being planted each year on the national forests and by the States, especially Michigan. Only about 7 per cent of the forest land is now in public ownership, but the public holdings are likely to be increased within the next few years.

#### CENTRAL HARDWOOD REGION

The region between the Appalachian Mountains and the prairies, from the Lake States pineries on the north to the southern yellow pine stands, originally had the finest stands of hardwoods that grew in the United States. Except in the mountainous sections, settlers cleared most of the land. On the whole it was right that forests should give way to farms; but a good deal of rough land was cleared that would better have remained in forest, for it has not proved permanently adaptable for successful agriculture.

Throughout most of the region fires have not been the serious menace that they are in coniferous forests, and many remnants of the original forest remain, although the best trees have generally been culled out. Many of the woodlots are subject to severe injury from unrestricted grazing of livestock, which prevents young growth from establishing itself to replace the old.

A good deal of the rougher land on the eastern and the Ozark Mountains should be publicly owned, either by the States or by the Federal Government; because of the vital relation of its forest cover to important streams, most of which

affect several States. There are small areas of State forests in the hilly land north of the Ohio River, and these areas will doubtless be extended. By far the greater part of the forests outside of the mountains will remain in private ownership, with small resident owners predominating. Forest products of all kinds are in demand practically throughout the region, and stumpage values are high, making intensive forestry practical. While a limited amount of planting may be necessary, the principal need of the region is for better handling of existing woodlands, so as to insure their natural restocking and to produce more timber of better quality.

#### THE PRAIRIE AND PLAINS REGION

In the prairie and plains States there was little natural forest except for scattered groves and narrow belts along the streams. The wooded area has been considerably extended since settlement, by the numerous plantations that were made for shelter belts or for firewood and fence posts. More of such planting is desirable, especially on the land less suitable for farming. For larger timber the region will have to depend, as it has in the past, on the Lake States, the South, and the West. Those regions have large areas of cheap land that is better adapted for timber growing than lands in the plains region, and can produce timber much more economically. It is, consequently, of distinct concern to the prairie and plains States that the forests of other parts of the country be kept productive.

#### THE ROCKY MOUNTAIN REGION

Between the Great Plains and the three Pacific coast States forests occur mainly on the various mountain ranges and are much broken by rugged divides and wide expanses of treeless land. Rough topography, lack of means of transportation, and prevailingly light stands of rather low-grade timber have kept the bulk of these forests from being drawn upon heavily except for local needs. The exceptions are the white-pine region of northern Idaho and western Montana and the yellow-pine region of the southwestern plateaus.

The value of many of the mountain forests for regulating the flow of streams utilized for irrigation and domestic purposes is fully as great as their timber value. About 85 per cent of the timber-producing land of the entire region is included in national forests, besides other large areas of

forest, brush, and grass land which must be carefully administered in order to protect the flow of streams. Fires formerly swept over vast areas, but are now kept in control through the combined efforts of the Federal Forest Service, the States, and the western timberland owners. Over most of the region trees grow slowly, the restocking of denuded areas is difficult, and natural restocking following cutting depends upon the careful application of proper cutting methods.

Considerable areas of forest in the national parks and on the Indian reservations, especially in the Southwest, are also under Federal control, while several of the States own important areas of forest land. The physical conditions are such that most of the forest in the Rocky Mountain region should be managed permanently by public agencies, and probably some of that now privately owned will eventually be reacquired either by the Federal Government or by the States. The most pressing immediate tasks are the maintenance of effective protection against fire and all other destructive agencies, and the gradual building up of permanent wood-using industries in communities near the forests.

#### THE PACIFIC COAST STATES

The three coast States contain more than 70 per cent of all the virgin softwood timber remaining in the United States, and now supply about two-fifths of the total softwood lumber cut. Their output is likely to increase materially during the next few years. Most of the remaining forests are in the mountains, but the heavy stands, excellent timber, and relative nearness to water transportation are attractive to capital and a large proportion of the best and most accessible stands are privately owned, mostly in large commercial tracts. Except in a few localities there is little land of agricultural value still under forest, hence the forest area should not be greatly reduced.

The forests have suffered enormous damage from fire, but the situation is now kept fairly well in hand by concerted action of Government, State, and private agencies. Some denuded land will have to be planted. In the coastal belt young growth generally comes in quickly after logging if fire is kept out. The pine forests east of the Cascades and in the Sierras require more careful handling to insure continuous production. Timber grows fairly fast in the pine forests, and in



the Douglas fir and redwood forests the rate of growth exceeds that in any other region.

The Federal Government owns more than half of the forest land in the three States, about 90 per cent of it being in national forests, and the States own comparatively smaller areas. Both State and Federal holdings should possibly be extended in certain localities, especially in the rougher portions. On a large proportion of the lands now privately owned, however, permanent forest management by private owners is economically feasible and should be encouraged and aided by public action. Several operators in the redwood and fir belts are already planning to undertake permanent forestry, and the number is likely to increase rapidly.

### HOW FORESTS ARE DESTROYED

Although forests are easily grown, they are also easily damaged. To grow timber intelligently requires careful logging, the sparing of young trees, the leaving of seed trees, freedom from fire, and handling of the crop from start to finish as the varying qualities and needs of different kinds of trees call for. Forest destruction may or may not follow the neglect of any or all of these measures, but forest impairment is inevitable without their use. Where forests of value still persist on cut-over land it is often by chance.

The complete disappearance of forests—their physical obliteration—is in most of the forest regions of the United States well-nigh impossible under any conditions reasonable to conceive of. To this statement there are, it is true, some large and important local exceptions. Climate, topography, and the make-up of the forest are all material factors. Mountain slopes covered with coniferous forests are often easily burned bare, and in places require the exclusion of lumbering in order to maintain the forest growth necessary for watershed protection. Continued and excessive overgrazing may in the end destroy a forest. Where the balance between timber trees and brush fields or grasslands is delicate, every fire pushes the forest back. Very thin or very sandy soil is easily denuded. But under conditions reasonably favorable to forest growth the trees maintain their fight for possession with stubborn vigor. Our main national danger is not that our forests will generally disappear. It is that they will so deteriorate under unintelligent handling as to be practically worthless, or at best of low

value. Forest wrecking is what we have to fear. It has already taken place on a vast scale.

In the old days, when forests were many and people few, loggers picked out only the best trees and left the rest. After the loggers were gone the forest still flourished, and grew again. Thus in Michigan, in the early days, the white pines were cut from among the then despised hardwoods, which shed seed into the gaps made by the logging and soon closed the canopy of the forest. Now, when even small trees can be used for paper or ties or mine props, cutting is much more complete.

The few seed trees that may by chance be left by the fallers are often broken down by logging; and the vast amount of debris left behind—limbs, bark, broken logs, unused tops—commonly catches fire either from the logging engines or from the match or camp fire or cigarette of a careless woodsman, tourist, or fisherman. The remnants of the forest vanish in smoke, and the next year a cover of weeds, grass, and brush usurps the soil, leaving little chance for any trees that may perchance have escaped fire and ax to start new seedlings.

Thus in a day the forest—a delicately balanced adjustment to conditions partly of its own making—may be disintegrated and virtually wrecked. Or the process may be slower; one fire after another gnawing down this tree and that, and destroying the young growth; successive logging operations taking whatever can be turned into cash; brush and grass invading the openings, gradually driving back the forest or thinning it out and sapping its vitality.

It is this treatment that has given us 80,000,000 acres of idle forest land, and that has made so much of our remaining forests patchy and broken and half productive. "Timber mining" is a long-standing tradition.

### HOW FORESTS MAY BE MAINTAINED

If we are to have forests—if forests are worth having—this tradition must be destroyed. Largely because men are set in old ways of doing things; largely because the general run of people are indifferent and careless with fire in the woods, the tradition and ways of timber mining persist.

Leave seed trees, use the forest but in using it disturb the balanced adjustment only with knowledge and as little as need be, keep out fire, and the vigor of the forest will assert itself.



Modify the logging so as not to destroy the trees that are left; have the logger, if local forest conditions permit, leave the smaller trees (which may yield little profit anyway); dispose of the logging debris by burning in safe seasons, and then keep out fire from all causes; provide fire lines, fire look-outs, and trained fire fighters; educate everybody to be scrupulously careful with fire—these are the essentials of reforestation. Given half a chance, seed trees will sow thousands of young trees—a far cheaper and usually better way to reproduce forests than costly artificial planting.

As the young forest approaches middle age, the less valuable trees can often be culled out and sold for pulp wood or posts or fuel, enabling the more valuable to grow more rapidly. Timber growing means, simply put, so treating the forest that nature will do the most for us. It means wisely selecting the trees to be harvested, cutting them carefully without wasting them or injuring the forest, and letting the small vigorous trees grow to larger size and greater value. Forestry after all is mostly woods sense, applied in the light of the best knowledge.

### GETTING A YEARLY CROP OF WOOD

The "sustained annual yield of timber" obtained by cutting each year, in the form of the biggest trees, the equivalent of the wood that grew on all the trees, big and little, during that year, has been worked out to great perfection in several European countries. It is the basic principle on which our national forests are managed. Here and there private owners have grasped the idea and are putting it into effect. And often it has been roughly practiced more or less by chance, as when a farmer culls over his woodlot each winter, taking out the larger trees for saw logs, ties, or fuel, and leaving the smaller ones to grow a while longer.

Not many people want to get a tract of bare land, plant a forest, and wait 50 years or more for it to mature. But it is seldom necessary to start with bare land. There are vast areas of second-growth forest capable of yielding a yearly cut of merchantable products. If fire is excluded, if the yearly cut is moderate, if common sense is used to cull out defective or crowded trees, the forest will not only yield its yearly crop but will improve in quality of wood and in amount of "growing stock," and hence in value and amount of the yearly cut.

It so happens that the bulk of our private timber lands is in very large holdings. These great holdings give many opportunities for industrial reforestation on the sustained yield basis. Large numbers of operators have 15, 25, or even 50 years' supply of saw timber on hand; in addition many of them own or could buy cut-over land bearing young tree growth of various ages. By using care in logging so that the remaining forest will regenerate itself as it is cut, by protecting the young trees of all ages from fire, and by adjusting yearly cut to yearly growth, these owners can have a perpetual yield of timber.

The principle of continuous yield can also be applied to the farmer's woodlot. By excluding fire and overgrazing, by cutting sparingly, by keeping his little forest intact with a good supply of young growth always coming on, he can have ready for his ax and idle team each winter trees suitable for posts, poles, fuel, pulp wood, ties, and saw logs to sell for cash or to use in the upkeep of his farm.

### WHY DO LAND OWNERS FAIL TO GROW TIMBER?

The main steps in timber growing are simple. Yet private reforestation is making too slow, though encouraging, headway. Few forest landowners are deliberately growing timber crops. This is true even in the South and the Pacific Northwest, where forests will grow lavishly if given half a chance.

Why is this? Partly because forest owners have not understood what timber growing really is and think too much in terms of expensive artificial planting rather than natural reseeding. The long implanted idea that timber is a mine rather than a crop has led to getting the most out of a forest all at once and investing the proceeds somewhere else instead of reinvesting them on the same land. Comparatively few have as yet genuinely analyzed the possible returns from timber growing. Often, indeed, there has been little assurance that it would pay.

Second, forest owners have been afraid of fire. Logging debris, they know, is a deadly fire trap, and the average person who goes into the woods or travels through them is too ready, from indifference or ignorance, to apply the match. Even if one owner is careful, his next neighbor may be careless and let a fire starting on his own land sweep over the whole countryside.



Third, the taxes on growing forests (which take many years to mature) are uncertain and have often been rapidly increased; future lumber prices are uncertain; the costs of timber growing are uncertain.

With these uncertainties and these traditions the average owner cuts his timber, too often lets fire run through the slashings, and then sells the land, rents it for grazing, lets it revert to tax sale for unpaid taxes, or holds on in the hope that something will turn up to give a value to this once rich soil, now stripped and idle. But it is like an abandoned factory building from which the machinery has been removed. It can not function again until the machinery—the trees—are put back and started at their work of growing wood.

Industrial reforestation is coming, will make headway as timber growing becomes a part of the common knowledge, as investors discover that young growth is worth owning, and as through reducing the fire risk, providing a stable taxation system, and other safeguards, the general public helps to attract more of the Nation's abundant capital to forestry.

The work of the Government in managing the national forests and in helping to work out a nation-wide forest protection scheme needs to be supplemented by private reforestation on a large scale. As a Nation we can not afford the piling up of huge areas of worthless denuded land. Nor can we safely allow the further deterioration of our forests. The private landowner has a responsibility. The public has also a responsibility to help create sufficient stability, profitability, and certainty in timber growing to insure industrial reforestation on a large scale.

#### THE NATIONAL PLAN OF COOPERATION

The Clarke-McNary forestry law, passed in 1924, provided the outline for a national plan of timber growing. The Federal Government, the States, and the private owners of forest lands are all integrated in this outline, each with an important and necessary part to take. But the general public has the most important part of all. For without active public espousal the plan will not be fully realized.

The Select Committee on Reforestation of the United States Senate, whose investigation and report led up to the passage of the law, held that public ownership of forest lands should be extended. The law itself authorized a liberal program of land purchase by

the Federal Government for timber growing, and provided means for bringing about use for this purpose, where practicable and advisable, of lands already owned by the Government but not under national forest administration. If the Federal acquisition program is consistently carried out, and if it is supplemented as time passes by the building up of State and municipal forests in reasonable proportion, the place of public forest ownership in a comprehensive plan of national timber growing will be adequately filled.

Still more important are the provisions of the law looking to cooperation between the Federal Government and the States in encouraging private owners to grow timber. Federal appropriations were authorized for this purpose up to \$2,700,000 annually—\$2,500,000 for the prevention and suppression of forest fires and for studies of forest taxation and timber insurance, and \$100,000 each for the distribution of forest planting stock to farmers and for farm-forestry extension. This part of the law went into effect on July 1, 1925, with appropriations of \$635,000 for fire protection, \$25,000 for studies of forest taxation, and \$50,000 for each of the farm-forestry activities.

The States now cooperating with the Federal Government in fire protection include all of the States north of the Potomac River, Ohio, Virginia, West Virginia, North Carolina, Tennessee, Kentucky, Georgia, Alabama, Louisiana, Oklahoma, Texas, the three Lake States, South Dakota, the States of the Pacific Northwest, California, and New Mexico. One other State, Missouri, has recently qualified and applied for cooperation. It is believed that additional States will qualify in 1926, including South Carolina and Mississippi, and that Florida and Arkansas are almost sure to qualify by 1927. The private lands for which this part of the Clarke-McNary law aims to build up an adequate fire-protection system at present comprise about 80 per cent of the 470,000,000 acres of forest land in the United States.

Inequitable taxation of forest lands ranks with the forest-fire danger as one of the two great obstacles to the production of timber on privately owned lands in this country. Under the provisions of the Clarke-McNary law the Federal Government and cooperating States have arranged for a comprehensive study of the tax problem. This study will cover the present systems of taxation in the forest

regions of the country, and is expected to result in the working out of modified systems which will aim to relieve the owner of growing timber of any unfair tax burden without undue disturbance to local revenues.

A rational forestry program must include the growing of timber on the farm. Lumber should be produced on farms both for home use and for sale; and windbreaks are needed on farms, particularly in the Middle West, to shelter the homestead, fields, and livestock. The farmers are the largest users of lumber and other forest products in the United States, consuming more than one-third of the total produced. If timber is not available at reasonable prices, they are the first to suffer. The farmers also have an important part in timber production. They own about one-third of all the forests and woodlands in the United States. In round figures, this amounts to about 150,000,000 acres, which if formed in a strip 100 miles wide would reach from New York to San Francisco.

The farms of this country include large areas of land now producing nothing of value, which if planted to trees would produce valuable timber. But the farmer can not afford to plant his waste lands unless he can buy planting stock at low cost. The purpose of the tree-distribution provision of the Clarke-McNary law is to enable him to get the kind and quantity of trees he needs at an expense approximating the cost of production.

The farmer should know more about the kinds, amount, and value of his timber. He needs information as to the best method of cutting and selling it. The Clarke-McNary law has made it possible for thousands of farmers to be helped toward better forest practices through instruction and demonstration on forest fire protection, timber cutting, preservative treatment of farm timbers, measuring and marketing timber on the farm, and forest tree planting. No less than 25 States will receive cooperation this year in distributing forest planting stock to farmers and giving instruction in the management of farm woodlands.

The Clarke-McNary law is not mandatory in any particular. Its cooperative provisions are put into effect through State organizations, and responsibility for the supervision of the work rests wholly on the States. The Federal Government reserves the right to inspect the cooperative work, offer suggestions, make recommendations, and withdraw cooperation from a State

that fails to maintain adequate standards.

Thus a national plan of cooperation to bring about timber growing on all the forest lands is provided. It presents a concrete program for every region, State, community, and individual to get behind and help to make effective. The degree of its success will depend upon the strength and extent of the participation in the plan by the people generally, through State and local cooperation.

### HOW TO STOP FOREST FIRES

The drain upon our timber supply from forest fires is enormous. Not only have the fires vastly reduced the supply of timber in the United States by destroying merchantable stumpage, but the burning of slashing and of cut-over lands has, more than any other cause, prevented an adequate regrowth of timber.

During the past nine years an average of 47,000 forest fires has occurred annually. An average of nearly 15,000,000 acres a year has been burned over. At least \$20,000,000 a year in property has gone up in the smoke of these fires. In years of special hazard the loss is even greater. In 1924 over 90,000 forest fires burned up property worth \$38,000,000. But these are only the immediate losses, chiefly timber, young growth, and improvements.

Indirect losses, including later decay of damaged timber, replacement of desirable species of trees by species less desirable but more fire resistant, soil deterioration and erosion, loss of wild life, irregularity of stream flow, and the like, raise the total enormously. More than 90 per cent of these fires were man caused, chiefly through incendiarism, brush burning, smoking, railroads, camp fires, and lumbering—and so were preventable.

Forest fire control is receiving much attention both from the State and Federal Governments and from private forest owners. Thirty-two States are now cooperating with the Federal Government in fire protection. During the current year these 32 States will expend about \$2,000,000 of State funds; private owners or associations of owners will spend a like amount; and the Federal Government will contribute \$635,000. This total of \$4,635,000, however, represents less than half of the \$10,000,000 that it is estimated is needed to give adequate protection from fire.



The prevention of forest fires calls for united effort by all who are interested in the forest and in the products of the forest. It is chiefly a matter of public education. When the bare facts as to the losses which forest burning inflicts become common knowledge, individual practices will change.

Local fire-prevention campaigns are needed to spread the knowledge that fire in the forest not only destroys timber and land values but lessens opportunity for every man in the community and for his children after him, in the long run takes money out of his pocket and reduces his standard of living, and cuts off school, road, and other public funds by destroying taxable wealth. Where the old mistaken idea prevails that fire improves grazing, it should be dislodged. In every locality of every forest region a powerful sentiment should be developed against carelessness with fire in the woods. Strict enforcement of laws against forest incendiarism, careless brush burning, and other causes of woods fires should be demanded by public sentiment. The effects of fire on forest recreational values and opportunities, on fish, game, and bird life and on stream flow and erosion should be clearly and widely understood.

One definite aim of forest fire-prevention campaigns should be the adoption of adequate State programs. In some States the first step toward organized public protection of forests has not been taken, and in others only a slight beginning has been provided. General public interest based on intelligent public grasp of the facts is the only sure foundation on which to rear stable State policies of forestry.

In short, stopping forest fires is a collective task. It can be accomplished if people want it accomplished. To a very large extent it must be brought about through the pressure of community sentiment on the individual, to make him change his practices, habits, and viewpoint. Along with this must go specific provision for organized fire control, based on public preception of the need for it.

#### WHAT OUR PRESIDENTS HAVE SAID

"I have come here . . . to testify to my continued interest in forest preservation . . . Let us begin to protect what we have . . . Let us get to work to do something now, for, although it may be but an inch of the mile we ultimately want, we must remember that a little done now is worth a great deal in the future."

Grover Cleveland, January 24, 1891, in a speech advocating legislation to save the Adirondack forests.

"The time has come when efficient measures should be taken for the preservation of our forests from indiscriminate and remediless destruction."—Grover Cleveland, December 4, 1893, annual message to Congress.

"If the present rate of forest destruction is allowed to continue, with nothing to offset it, a timber famine in the future is inevitable. Fire, wasteful and destructive forms of lumbering, and the legitimate use taken together, are destroying our forest resources far more rapidly than they are being replaced. It is difficult to imagine what such a timber famine would mean to our resources. And the period of recovery from the injuries which a timber famine would entail would be measured by the slow growth of the trees themselves. Remember, that you can prevent such a timber famine occurring by wise action taken in time, but once the famine occurs there is no possible way of hurrying the growth of the trees necessary to relieve it. You have got to act in time or else the Nation would have to submit to prolonged suffering after it had become too late for forethought to avail."—Theodore Roosevelt, address before American Forest Congress, 1905.

"And now, first and foremost, you can never afford to forget for one moment what is the object of our forest policy. That object is not to preserve the forests because they are beautiful, though that is good in itself, nor because they are refuges for the wild creatures of the wilderness, though that, too, is good in itself; but the primary object of our forest policy, as of the land policy of the United States, is the making of prosperous homes. It is part of the traditional policy of home making of our country. Every other consideration comes as secondary. The whole effort of the Government in dealing with the forests must be directed to this end, keeping in view the fact that it is not only necessary to start the homes as prosperous, but to keep them so. That is why the forests have got to be kept. You can start a prosperous home by destroying the forests, but you can not keep it prosperous that way."—Theodore Roosevelt, in address before Society of American Foresters, 1903.

"The Federal Government has no power to compel owners of forests to attend to those forests with a view to the welfare of the community, of

the neighbors who live there, or of those who are affected by the denudation of the land of the trees. That must be done through the State Government if it is done at all. And so with respect to many of the streams. Indeed, if one follows out legal reasoning, it will seem, I think, that there is more to be done by the States in the conservation of resources even than by the Federal Government, large an influence as that Federal Government may have by reason of its ownership of the public domain."—William H. Taft, January 17, 1910, address before the National Civic Federation at Washington.

"The importance of the maintenance of our forests can not be exaggerated. The possibility of a scientific treatment of forests so that they shall be made to yield a large return in timber without really reducing the supply has been demonstrated in other countries, and we should work toward the standard set by them as far as their methods are applicable to our conditions."—William H. Taft, special message to Congress, 1910.

"We must use the resources of the country, not lock them up . . . The resources in question must be used, but not destroyed or wasted; used, but not monopolized upon any narrow idea of individual rights as against the abiding interests of communities."—Woodrow Wilson, December 2, 1913. Annual message to Congress.

"It is common knowledge that there is ample land in this country of ours, not adapted to other uses, to produce a sufficient supply of timber for all our needs, if it is only stocked with trees and nature is allowed to contribute to our necessities. We must begin to think of timber crops as we do other cultivation in this land of ours, and we must put an end to that carelessness and neglect to which we trace our destructive forest fires. With timber growing on the one hand, and forest preservation and protection on the other hand, there isn't any reason why the United States should not be self-reliant in the great essential of lumber for construction purposes."—Warren G. Harding, August, 1920, Southern Lumberman.

"A tree saved is a tree grown. . . . We hold the resources of our country as a trust."—Calvin Coolidge, November 19, 1924, National Conference on Utilization of Forest Products.

"The end of free timber is in sight. World competition for the world sup-

ply will leave no large dependable source of imports open to us. The use of substitutes hardly keeps pace with new uses for wood; there is no likelihood that we can become a woodless Nation even if we wanted to. When the free timber is gone we must grow our wood from the soil like any other crop.

"Strange as it may seem, the American people, bred for many generations to forest life, drawing no small measure of their wealth from the forest, have not yet acquired the sense of timber as a crop. These immense stretches of cut-over land, mostly too rough or too sterile for tilling, have not awakened us to their vast potential worth as growers of wood. Fully one-fourth of our land area ought to be kept in forest . . . not poor, dwindling thickets of scrub, but forests of trees fit for bridges and houses and ships. Handled by the best timber-cropping methods, our present forest lands could be made to grow even more timber each year than we now use. But much of our cut-over land, lying idle or half productive, is now an immeasurable loss. It pays little or no taxes, it keeps few hands busy, it turns few wheels, it builds no roads. Idle forest land has scrapped schools, factories, railroads, and towns; it has dotted the land with abandoned farms; it has created a migratory population. Our forest problem is a land problem of the first magnitude."—Calvin Coolidge, November 19, 1924, National Conference on Utilization of Forest Products.

#### WHERE EVERYBODY COMES IN

The transition from timber mining and subsequent slow recovery of the forest as a wild-land growth to the general practice of intelligent timber growing (or "forestry") is not an easy thing to bring about. That the welfare of our country calls for speeding up the transition is pretty generally recognized. "American Forest Week" was instituted in recognition of the need for this—and also in recognition of a need for general public participation in hastening it. But how is the ordinary man and woman to help? What should be done?

The first and greatest need is for everybody to understand what is involved. Forest perpetuation is not a matter of refraining from use either of the forests or of lumber and other forest products. It is not a matter of restrictions and prohibitions aimed at less use. It is a matter of right and wise use. We must grow what we shall



need; and we must put idle and partly idle acres at work full time, and to best purpose. This will happen when the public understands clearly that it is necessary, and understands the nature of the form of land management that constitutes timber growing. It will not happen until the public understands these things—that is, both the why and the how.

Primarily this is because of the tremendous force of inertia, habit, and point of view. If as a people we understood how to grow timber and why it is becoming more and more profitable, large numbers of forest landowners, large and small, would be doing it; most farmers would be doing it; many firms and corporations of the wood-using industries would be doing it. It would be in the air. If everybody were to begin to say to each other "Grow timber! The thing to do for our forests and with out forests is to grow timber," timber growing would spread amazingly.

But there is a more direct and immediate reason why the general public should be informed and interested. The spread of timber growing must be accelerated by public action and public participation. Federal, State, and municipal forest ownership needs to be enlarged. State systems of protection of growing forests against fire need to be extended and made more effective. Methods of taxing forest lands need revision to facilitate reforestation. A nation-wide war against customs and practice which are responsible for our enormous preventable forest-fire losses, and which come down to individual ignorance, indifference, and carelessness, needs to be waged. Public agencies of research comparable with those now in existence for finding out how to farm better, and public provision for getting the knowledge of better methods that research provides taken over into individual practice, are another important need. And a great-

er sense of personal responsibility on the part of property owners to build up values, not to skim the land and take their profits away to reinvest elsewhere leaving impoverishment behind them, needs to be developed.

All these things call for an intelligent, alert public opinion. If what has been said above is true—and that it is true seems to be generally recognized—laws will have to be passed, public funds will have to be provided, administrative agencies will have to be created or given larger responsibilities. But merely putting laws on the statute books, voting money, and creating and filling new public offices will not insure the results needed. Without the continued interest and attention of the people themselves, no new mechanism can be set up and guaranteed to restore our forests.

The fundamental responsibility for bringing about right use of our forests rests not with timberland owners, nor legislatures, nor State and Federal executive and administrative officers, but with the people themselves. It is to emphasize this big factor of public responsibility that the President yearly proclaims American Forest Week. It is a time for thought by everybody as to what his own part in this public responsibility is, and for the taking of common counsel as to what specific course of action, local and general, the public welfare calls for.

#### LUMBER CONTRIBUTED BY THE PRODUCING REGIONS

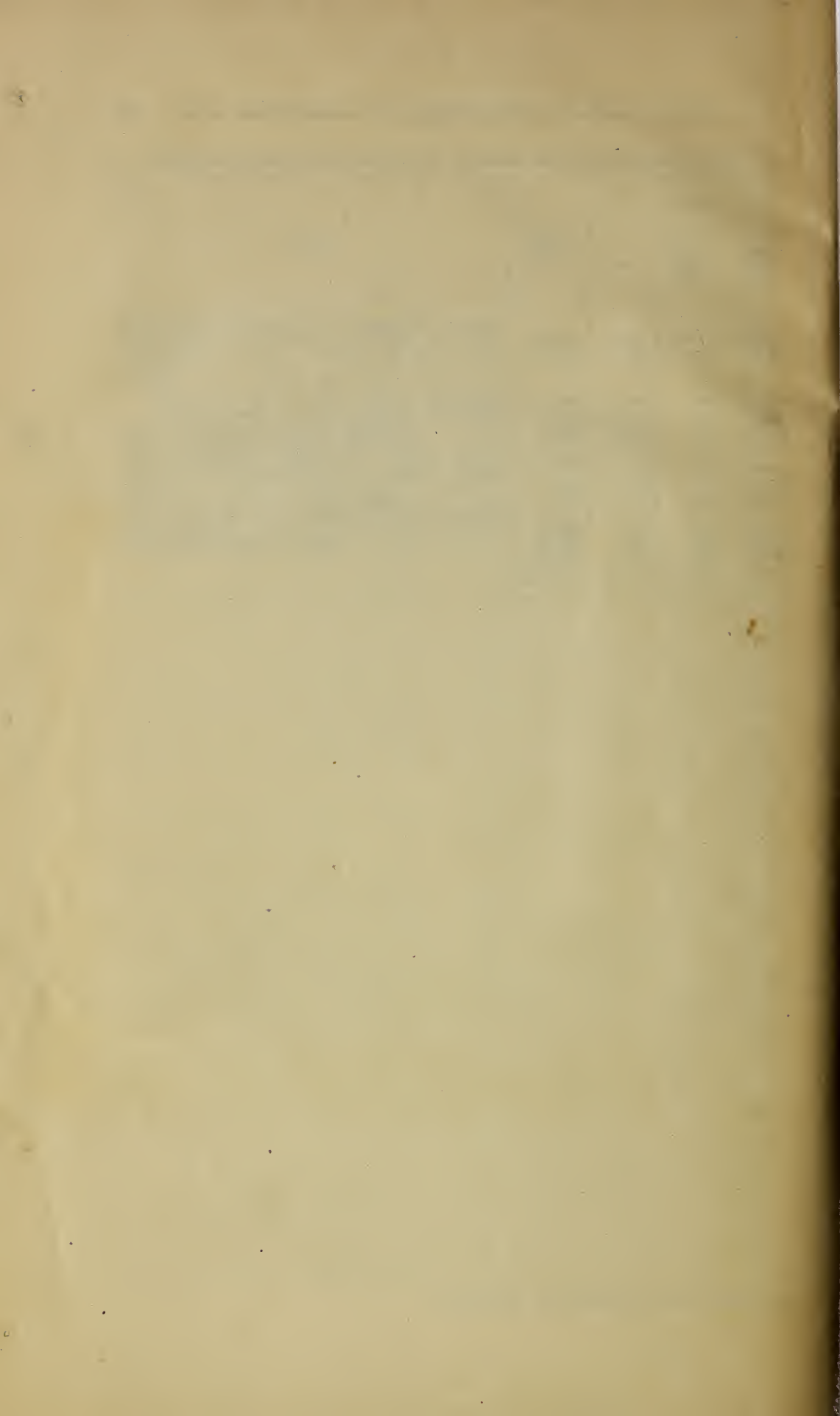
In 1924 the lumber cut of the country totaled 35,930,986,000 board feet. The regions in which it was produced, the total stand of saw timber in each region, the quantity shipped out of each for consumption elsewhere, and the net shipments, or, in other words, the excess or deficiency of the cut in each region, are shown on page 14.



*Regional shipments, actual and net, compared with cut and stand, 1924*

Regions	Saw- timber stand	Lumber		
		Cut	Ship- ments out of region	Net ship- ments
Northeastern States: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia.....	<i>Million ft. b. m.</i> 94,656	<i>Million ft. b. m.</i> 1,619	<i>Million ft. b. m.</i> 39	<i>Million ft. b. m.</i> -5,867
The South:				
Carolina group—Virginia, North Carolina, South Caro- lina.....	91,500	2,646	1,683	+1,307
Gulf group—Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, Oklahoma.....	409,985	13,593	7,780	+7,654
Lake States: Michigan, Wisconsin, Minnesota.....	110,110	2,338	704	-1,310
Central States: West Virginia, Ohio, Indiana, Illinois, Kentucky, Tennessee, Missouri.....	138,685	2,037	742	-5,261
Prairie States: Iowa, North Dakota, South Dakota, Kansas, Nebraska.....	9,441	69	12	-1,569
Northern Rocky Mountain: Montana, Idaho.....	136,112	1,368	1,058	+961
Southern Rocky Mountain: Wyoming, Colorado, Utah, New Mexico, Arizona.....	83,246	332	137	-346
North Pacific: Washington, Oregon.....	827,700	9,933	6,283	+6,195
South Pacific: California, Nevada.....	313,458	1,996	541	-1,764
	2,214,893	35,931	18,979	±0







Agriculture. Forest  
trees... 1926.

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